every symmetrical point or part is equal. For example, the two lamps, the two plastic sheets, the aluminum parts and other parts, are equal. All these serve toward the main function of the panel, which is to maximize the illumination of the two symmetrical display signs. Symmetrical light sources give symmetrical illumination, which means the illumination offered by the two light sources is equal. This feature is not mentioned in Easterday et al, in Ashall or in any cited patents. Therefore, applicant's invention is a new application of scientific optical principles and not merely an obvious variation of previous attempts.

In The Claims:

Claim 1 and 19:

Examiner rejected claims because Examiner believes it would have been obvious to one of ordinary skill to use the second light source of Ashall in the apparatus of Easterday for providing light. In response, applicant submits the following arguments:

The panels' main function is to illuminate the display signs. In Easterday's patent, two parallel display signs are illuminated with one incandescent light source that is placed in the center of the panel and behind the display signs. In Konomi's patent application, two parallel display signs are illuminated by two linear fluorescent light sources placed on the sides of the panel that achieve a proportionate and uniform illumination. This is not the case in Easterday et al. In Ashall's patent one fluorescent light source is used which does not illuminate the display signs. Furthermore, the suggestion of use of a second light in Ashall is applied only to "very large signs". See Ashall Column 3, line 16 (5,625,968). This shows the great design differences between the prior art and the present invention.

Claim 2:

Examiner rejected claim 2 because Examiner believes it would have been obvious to one of ordinary skill to determine an overall thickness for distributing light. In response, applicant submits the following arguments:

While differences in dimensions are obvious where changes in dimensions would not cause a device to perform differently, changes in dimensions which effect performance and effectiveness of a new device are nonobvious. See Gardner v. TEC Systems, Inc., 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), *cert denied*, 469 U.S. 830, 225 USPQ 232 (1984); MPEP §2144.04(IV)(A.). The box's dimensions are in variation according to the light sources' diameter, which is mentioned in the application's paragraph 47. The lamps' diameters are 16 mm, 26 mm and 38 mm for lamps T5, T8 and T12 respectively. The box's width is approximately 1 inch larger than the diameter of either lamp that is being used. Therefore, we have three different box sizes, 37 mm, 52 mm and 65 mm respectively. It is not possible to use larger boxes with these lamps, as that will prevent us from utilizing the maximum amount of light to successfully illuminate the display panels. Easterday does not disclose the dimensions of the box, neither is this a variation in design.

Claim 3:

Examiner rejected Claim 3 because Examiner believed it would have been obvious to one of ordinary skill in the art to use two plastic sheets with a width of 2mm. In response, applicant submits the following arguments:

The placement of the stamped picture within two plastic sheets with a width of 1.5 mm to 2 mm, keeps it straight, which means it will not be bent or deformed and will

also be protected from the forces of nature, such as moisture, dust, smog and temperature fluctuations, etc. (Paragraph 83) Easterday et al does not use two plastic sheets. Ashall, however uses two plastic sheets, yet they must serve a different purpose as they are either colored or solid white. "In the case of a two-sided sign, another sheet with a light coloured face, preferably white, facing the dot matrix of the transparent sheet, is attached." (Column 2, lines 43-45)

Claim 4:

Examiner rejected claim 4 because Examiner believed that Easterday et al. discloses a light directing panel comprising 2 sides. In response, applicant submits the following arguments:

In Easterday et al, light directing panel 26 has two non-transparent and non-parallel sides. In Konomi, on the other hand, light directing panel 8 is 50% transparent and 50% non-transparent and the two sides are parallel to each other.

Claim 5:

Examiner states that, regarding claim 5, Easterday's light directing panel 26 has four sides. However, Easterday only suggests that two sides be used to reflect light. The inner sides of the panels are not utilized in the device nor suggested to reflect light for the sign panels.

Claim 6:

Examiner rejected Claim 6 because Examiner believed that Ashall discloses a light directing panel that is substantially transparent. In response, applicant submits the following arguments:

In applicant's invention, light rays originating from the light source are used to illuminate the desired faces. However, it is not possible that Ashall's transparent sheet 10 directs light toward the display signs. No direct rays that originate from the light source 21 goes through surfaces 11 and 12. All rays either go through the parallel surface to the light source, which is the top surface of the panel, or are contained within the transparent sheet 10. The illumination of the desired faces in the Ashall invention is minimal.

Claim 7:

Examiner rejected Claim 7 because Examiner believed that Easterday et al. discloses a light directing panel that is completely non-transparent. In response, applicant submits the following arguments:

Regarding claim seven, Easterday's light directing panel 26 may also be non-transparent as is Konomi's light directing panel 50, however, the shape as well as the positioning of these two light directing panels are completely different. Positionings that effect performance and effectiveness are nonobvious differences in applicant's invention.

Claim 8:

Examiner rejected Claim 8 because Examiner believed that it would have been obvious to one of ordinary skill to make a plurality of light sources having the same distance between each other. In response, applicant submits the following arguments:

Regarding the distance between the two light sources, in paragraph 23, page 11 of Konomi's patent application, it is stressed that this distance should not be greater than 0.6 to 0.65 of their length. It must be less but not greater because the illumination in the middle of the panel becomes less and less the greater the distance becomes.

Claim 9:

Examiner rejected Claim 9 because Examiner believes that the claim is obvious over Easterday et al. in view of Ashall. In response, applicant submits the following arguments:

In figure 1 in Easterday et al, the lamp's distance from the middle of the display signs and from the sides of the display signs is different. The illumination in these two parts is also different. In Konomi's patent application, the two light sources are equidistant from the display signs and the illumination is uniform. Ashall's use of second light source is only for very large signs.

Claim 10.

Examiner rejected Claim 10 because Examiner believes that Easterday et al. discloses two display signs having the same height and length. In response, applicant submits the following arguments:

The difference between Easterday and applicant's panels is the surface these display panels cover in each panel. In Easterday's panel, display signage panel 18 covers only about 1/3 of the overall box. In applicant's panel however, the two display signage panels cover the entire surface of the panel.

Claim 11:

Examiner rejected Claim 11 because Examiner believes that the claim is obvious over Easterday et al. in view of Ashall. In response, applicant submits the following arguments:

Ashall has not discussed this feature in his invention anywhere in his patent. In column 2, lines 16-17, Ashall is mentioning the fact that another light may be required if

the sign is larger than what he specifies. Also, in column 2, lines 43-49 Ashall discusses a second transparent sheet that its use seems to be unnecessary. There is no evidence that the glass portion of the light source is the same width as the display signage.

Claim 12:

Examiner rejected Claim 12 because Examiner believes that Easterday discloses a light directing panel that is substantially the same height as the two display signage panels. In response, applicant submits the following arguments:

Easterday does not discuss the angle formed by the two sheets of light directing panel 26 which determines the height of the light directing panel and the two display signage panels. When this angle is made smaller, the height of the light-directing panel 26 as well as the two display signage panels grows and the illumination given by light source 14 is minimized. On the other hand, if this angle is made larger, the height of the light-directing panel 26 as well as the two display signage panels is made smaller and has 0 as a limit. In applicant's panel, the height of the light-directing panel 8 as well as the height of the two display signage panels are dependent on the height of the light sources and cannot be smaller or larger.

Claim 13:

Examiner rejected Claim 13 because Examiner believes that the claim is obvious over Easterday et al. in view of Ashall. In response, applicant submits the following arguments:

The response to this rejection is similar to that of claim 12, however, the light-directing panel's height has no connection with the lamp's size.

Claim 14, 15 & 16:

Examiner rejected Claims 14, 15, and 16 because Examiner believes that the claim is obvious over Easterday et al. in view of Ashall. In response, applicant submits the following arguments:

Easterday et al. discloses the interior of the housing is at least partially reflective surface for reflectively directing light toward the two display signage panels, however, Applicant's device has a parabolic reflector placed behind the light sources to maximize the illumination of the two display signage panels. (Fig. 13 & 22) In regards to the rigidness of the housing, it is impossible to create a housing that will protect its components from destruction, without it being constructed of rigid material.

Claim 17:

Examiner rejected Claim 17 because Examiner believes that the claim is obvious over Easterday et al. in view of Ashall. In response, applicant submits the following arguments:

The examiner refers to Easterday's wire that connects the lamp to the plug as the electrical circuitry when Konomi refers to the wire as the line which is only one part of the electrical circuitry. Konomi's electrical circuitry consists of two ballasts, two starters, two fluorescent lamps and the wiring, components that are well positioned within the housing without interfering with the illumination of the two display signage panels. It is quite simple and it requires no special skill to accommodate a small piece of wire, however it is a challenge to accommodate a number of things in such a thin housing.

Summary:

In summary the main differences between applicant's invention and Eeasterday et al. is:

1. The lighting given by the light source(s) and the percentage of that illumination that is actually used towards our goal.
2. The types of lamps used.
3. The number of lamps used.
4. The positioning of the lamps.
5. The types of the light-directing panels used.
6. The size of the display signage panels.
7. The panels' dimensions.
8. The uniform illumination of the display signage panels.
9. The general construction of the panels.

CONCLUSION

Reconsideration and further examination is respectfully requested.

Applicant has made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Jason Bryan, Applicant's Attorney at (617) 720-5822 so that such issues may be resolved as expeditiously as possible. For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,

4/28/03
Date

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Listing of Claims:

CLAIMS

What I claim is:

1. (Original) A double-sided edge lighting-type display box comprising:

two display signage panels, having a desired design face;

at least two light sources offset from and behind said two display signage panels; and

a light directing panel located behind at least one of said two display signage panels;

whereby light directly incident on said at least one display signage from said at least two light sources and redirected light from said light-directing panel backlight and illuminate said two display signage panels, or at least one display signage panel.

2. (Original) The double-sided edge lighting-type display box of claim 1 wherein the overall thickness of the double-sided edge lighting-type display box is 37mm-65mm or 1.5 - 2.5inches.

3. (Original) The double-sided edge lighting-type display box of claim 1 wherein said two display signage panels are constructed of two sheets of plastic material, with a width of 2mm each, that allow the desired picture to be placed and held tightly between them.

4. (Original) The double-sided edge lighting-type display box of claim 1 wherein said light-directing panel comprises two sides.

5. (Original) The double-sided edge lighting-type display box of claim 1 wherein said light directing panel comprises four sides.

6. (Original) The double-sided edge lighting-type display box of claim 4 wherein at least a portion of said light-directing panel is substantially transparent for allowing light incident thereon to pass through said light-directing panel and toward said display signage panel.

7. (Original) The double-sided edge lighting-type display box of claim 5 wherein the light-directing panel is completely non-transparent.

8. (Original) The double-sided edge lighting-type display box of claim 4 or 5 wherein the distance between said two lamps is less than sixty-five (65) percent of the length of the said two light sources.

9. (Original) The double-sided edge lighting-type display box of claim 1 further comprising two display signage panels having a desired design face, a first display signage panel and a second display signage panel, wherein said two light sources are offset from and located substantially equidistantly from said fIrst

display panel and said second display signage panel; and said light directing panel is located substantially equidistantly between said two display signage panels whereby light directly incident on each display signage panel from said two light sources and redirected light from said light-directing panel backlight and illuminate said first display signage panel and said second display signage panel.

10. (Original) The double-sided edge lighting-type display box of claim I wherein said two display signage panels have substantially the same height and length.

11. (Original) The double-sided edge lighting-type display box of claim 1 wherein said two display signage panels are substantially as tall as the glass portion of the said two light sources.

12. (Original) The double-sided edge lighting-type display box of claim 1 wherein said light-directing panel is substantially the same height as the said two display signage panels.

13. (Original) The double-sided edge lighting-type display box of claim 4 or 5 wherein said light-directing panels have substantially the same height as the glass portion of the said two light sources.

14. (Original) The double-sided edge lighting-type display box of claim 1 further comprising a housing for supporting two display signage panels or at least one display signage
panel.

15. (Original) The double-sided edge lighting-type display box of claim 14 wherein the interior of said housing is at least partially reflective surfaced for reflectively directing light toward said two display signage panels or at least one display signage panel.

16. (Original) The double-sided edge lighting-type display sign of claim 14 wherein said housing is constructed of a rigid material.

17. (Original) The double-sided edge lighting-type display sign of claim 14 wherein said housing further houses electrical circuitry associated with powering the double-sided edge lighting-type display sign, wherein said electrical circuitry is configured not to interfere with the backlighting and illumination of said two display signage panels.

18. (Original) The double-sided edge lighting-type display sign of claim 1 further comprising two light sources.

19. (Currently Amended) The double-sided edge lighting-type display sign of claim ~~18~~1 wherein said two light sources comprised elongated fluorescent bulbs.